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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,044	03/29/2004	Colin H. Self	44008.011000	1445

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EXAMINER	
LUNDGREN, JEFFREY S	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,044	SELF ET AL.	
	Examiner	Art Unit	
	Jeffrey S. Lundgren	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 15-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 15-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicants' election of the "antibody" core molecule conjugated with "nitrophenyl ethanol" in the reply filed on October 3, 2005, is acknowledged. Because Applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election *without traverse* (MPEP § 818.03(a)).

Accordingly, claims 1 and 15-23 will be examined on the merits.

Priority

Applicants are required to update the status of the priority application (*i.e.*, U.S. Application No. 08/635,887) in the first sentence of the specification in compliance with 37 CFR § 1.78(a) by filing an amendment to the first sentences of the specification. *See* MPEP § 201.11.

Objection Under 37 CFR § 1.75

Claims 15-18 are objected to for being directed to subject matter that is not part of the elected invention (*i.e.*, a "method"). *See*, 37 C.F.R. § 1.75. Applicants can overcome this objection by deleting the phrase "or a method" in the first line of each of claims 15-18.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, ***or*** composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-18 are rejected under 35 U.S.C. § 101 because a claim is only allowed to be directed to a single statutory category, *i.e.*, any new and useful process, machine, manufacture, *or* composition of matter. Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 15-18 and 20-23, are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention.

Claims 15-18, are indefinite because each of the chemical structures violates the permissible valences. Claims 15 and 16 are indefinite because it is not clear how the labile residue shown using a chemical structure is bound to the core molecule, or how the proper valences have been established in the labile group (*i.e.*, Z in claim 15 lacks a group; the carbon off of the phenyl structure in claim 16 exceeds its permissible valence. Claim 17 is indefinite because it does not appear to have an open site for covalent bonding. Claim 18 is indefinite because it is not clear from the chemical structure what other group is attached to the quaternary carbon atom of the benzene besides the group R_8, and the phenyl moiety (*i.e.*, there are two open bonds).

Claims 1, 15-18 and 20-23, are indefinite because the claims use the phrases "such as," "preferably" and "ie" render the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Correction is required.

Claims 1, 15-18 and 20-23, are indefinite for recitation of the term "smaller" in line 2 of claim 1. Specifically, it is not clear if Applicants are referring to a geometric dimension that is smaller, the molecular weight that is smaller, or another property of the labile residue that can be quantified as being "smaller."

Claim 18 is indefinite for not defining the chemical groups for R_{10}, and also for listing a definition for R_{20} that does not appear in the chemical structure.

Claims 20 and 22, are indefinite for being directed to "the antibody according to claim 1" because claim 1 is directed to a "molecular composite."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 15-23 are rejected under 35 U.S.C. 102(b) as being anticipated by each of: Eby R., *Carbohydrate Research 70(1)*:75-82 (**1979**); Self *et al.*, *Nature Medicine 2(7)*:817-820 (**1996**); Thompson *et al.*, *Biochemical and Biophysical Research Communications 201(3)*:1213-1219 (**1994**), and Goldmacher *et al.*, *Bioconjugate Chemistry 3(2)*:104-7 (**1992**).

Claim 1 is directed to a composition, wherein the composition comprises a core molecule having one or more active sites, and a plurality of smaller labile residues reversibly attached to the core molecule. The attachment of the labile residues causes an alteration in the core's binding, and the labile residue is dissociable under electromagnetic energy, such that the active site regains activity. Claims 15-18 depend from claim 1, and are directed to certain labile residues defined by generic chemical formulae. Claims 20 and 21 specify that the labile residue is 2-nitrobenzyloxycarbonyl. The elected species, nitrophenyl ethanol and/or the conjugate it forms upon reaction to the core molecule, is encompassed by each of claims 15-18, 20 and 21. Claim 19 is similar to claim 1, but specifies the core as an antibody. Claims 22 and 23 limit the electromagnetic radiation to visible or UV light.

Claims 1 and 15-23 are anticipated by Eby:

Eby teaches an oligosaccharide (*i.e.*, core molecule) modified with 2-(4-nitrophenyl)ethanol (*i.e.*, smaller labile residues) on multiple active sites (pages 76 and 77), and teaches that the activity of modified active sites effects activity, *i.e.*, the nonterminal residues along the dextran chain (page 78), and the residues have the property of being labile under electromagnetic energy and that reversibly restore the oligosaccharide activity with its antibody, as required by claims 1 and 19. The 2-(4-nitrophenyl)ethanol used by Eby is within the scope of claims 15-18. The labile residue that forms a part of the composite is 2-nitrobenzyloxycarbonyl, as required by claims 20 and 21, and the composite is sensitive to UV light, as required by claims 22 and 23. Although the "labile" 2-(4-nitrophenyl)ethanol is not directly bound to the antibody, each of the claims read on Eby.

Claims 1 and 15-23 are anticipated by Self:

Self teaches a composition of coated mouse IgG with variable quantities of 1-(2-nitrophenyl)ethanol (NPE). The binding of the Fc region of the NPE-coated IgG to protein A was studied as a simple model of how the binding affinity, and taught how the biological function of a protein, may be regulated. Self's initial results suggest that it is possible to use a non-specific NPE-coating to reversibly inactivate biologically active molecules. When the results are expressed in terms of recovery of the IgG which was originally blocked by the NPE coating, it is observed that between 67% and 52% of the IgG blocked with an average of 2-3 residues was recovered by 10 min UV irradiation, and 49% of the IgG blocked by an average of 11.5 residues of NPE was released on 5 min irradiation. The 2-(4-nitrophenyl)ethanol used by Self is within the scope of claims 15-18.

Claims 1 and 15-23 are anticipated by Thompson:

Thompson teaches methods to allow the reversible binding of up to 15 nitrobenzyl residues per bovine serum albumin mol. and show 95% of these residues can be removed by exposure to UV light for 10 minutes. Thompson not only teaches that the general non-specific coating method can be presented by a model system, but is applicable to a wide range of proteins with important biological functions. Potentially, any protein could be coated with sufficient photo-removable groups to inhibit its biological function. Thompson teaches that the activity may then be restored at will by exposure to UV light removing the coupled 2-nitrobenzyl groups.

Claims 1 and 15-23 are anticipated by Goldmacher:

Goldmacher teaches a novel photocleavable protein cross-linking reagent that has been used for conjugation of the ribosome-inactivating protein pokeweed antiviral protein from seeds of *Phytolacca americana* (PAP-S), with either the monoclonal antibody 5E9 directed against the human transferrin-receptor or the B-chain of ricin that binds to cell-surface oligosaccharides bearing terminal D-galactose residues. When irradiated with near-UV light (350 nm), the linker of these conjugates undergoes photolytic degradation, resulting in the release of native toxin that is fully functional. The cytotoxicities of these 5E9-PAP-S and ricin B-chain-PAP-S conjugates for HeLa cells could be enhanced by irradiating the cells with light after they had internalized the conjugates. The labile residue is 2-(4-nitrophenyl)ethanol, and is bound to the antibody. Although the "labile" 2-(4-nitrophenyl)ethanol is not directly bound to the antibody, each of the claims read on Goldmacher.

Accordingly, claims 1 and 15-23, are anticipated by the art of record as indicated.

Conclusions

No claim is allowable.

If Applicants should amendment the claims, a complete and responsive reply will clearly identify where support can be found in the disclosure for each amendment. Applicants should point to the page and line numbers of the application corresponding to each amendment, and provide any statements that might help to identify support for the claimed invention (*e.g.*, if the amendment is not supported *in ipsis verbis*, clarification on the record may be helpful). Should Applicants present new claims, Applicants should clearly identify where support can be found in the disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jeff Lundgren whose telephone number is 571-272-5541. The Examiner can normally be reached on 8:30 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSL

Jon Epperson

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